

An Essay
on
Suppuration

Respectfully submitted to the Faculty
of the
Homoeopathic Medical College
of
Pennsylvania

For the Degree
Doctor of Medicine

by
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Pennsylvania
Feb 1st 1861.

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In the vast domain of Medical science, there are numerous problems that have engrossed the minds of Medical men from time to time, and yet remain unsolved; each in turn have formed opinions with regard to certain subjects, but they seldom agree unanimously on any one point; this is the case with the subject under consideration.

In view of the limited means for research and observation, afforded the student during his college life, his ideas and opinions must be formed from the observations of those, who have passed over the field of investigation.

It is by a catenation of observations

on the subject under consideration, that a theory may be adduced, which will account for the formation of pus in a manner, although diametrically opposed to the opinions of some surgeons, has been hinted at in the writings of others.

Before entering fully into this subject, it would be well to give a passing glance at the product of this process, and the principle entering into its formation.

Pus, when formed in a healthy and vigorous constitution, is an opaque fluid, of a yellowish white color, and sweet mawkish taste: in consistence it resembles cream - it has a faint odor, and an

alkaline reaction. When viewed under a microscope, it is found to consist of corpuscles, floating in a homogeneous fluid; the corpuscles are no doubt, the modified exudation corpuscles of the lymph.

These are the characteristics of pus, in its healthy or laudable state; but there are circumstances that induce a variation in its character and consistence. Thus, if it be found mixed with blood, it is called sanious pus; - or, if it be watery and acrid in its character, corroding the parts with which it comes in contact, it is denominated ichorous pus. Then again, it may be mixed with mucus or serum; this generally happens when

the inflammation attacks mucus or serous surfaces, and it receives its name from the character of the admixture: as Mucopus and Seropus. Beside these varieties, there is pus of a specific character as that produced in Gonorrhoea or Syphilis.

There is a vast difference of opinion among medical men with regard to the mode of production of this peculiar fluid, and the ultimate end to be accomplished by its formation in the animal economy.

There is, as a consequence of the inflammatory process, a deposit of coagulable lymph in the interstices of the cellular tissue.

Of this deposit pathologists, generally, recognize two kinds - the fibrinous and corpuscular. The health, habit, and constitution of the individual, determines the character of the exudation.

The fibrinous, or that in which the fibrin predominates, and which gives a more plastic consistence to the exudation, is found to occur in young and healthy subjects of a vigorous constitution and in whom there does not exist any predisposition to disease; while on the other hand, the corpuscular is found only in persons with a depraved condition of the system or scrofulous diathesis.

This variety is more prone to degeneration in consequence of the absence of the constituent most necessary to organization and development viz: - Fibrin; thus are we able to account for the fact, that suppuration occurs more frequently in persons of a strumous habit, or cachectic condition of system.

When the inflammatory process occurs in a person of a healthy constitution, there is less disposition to suppuration, in consequence of the exudation in this case, partaking more of the fibrinous character, and consequently, enjoys a greater degree of vitality.

If it should occur in those persons, the vitality of whose systems has

been depressed by excesses in life, chronic diseases, or where there exists a scrofulous taint; it will rapidly run on to suppuration; the reasons are obvious to every reflecting mind. We will now consider the changes that take place in the lymph that has been effused; it generally forms a circumscribed tumor, the centre of which commences to degenerate, in consequence of the condition of the system, and the character of the effusion being favorable to such a process; here in this central degenerating point, we have the nucleus of an abscess.

Now we will endeavor to trace out the changes that take place,

From this point until the abscess is fully matured.

As the inflammatory process is progressing in the surrounding tissues, there is layer after layer of lymph deposited on the periphery of the tumor; at the same time the internal, or lining layer, is degenerating into pus; while the probability is that the material composing the cellular tissue is removed by interstitial absorption, caused by the confined pus pressing on the absorbents of the part and stimulating them to an increased action.

In support of this theory of the formation of pus, I will quote the following paragraph from the writings

of Paget, the eminent pathologist. He says "If the formation of an abscess be watched, one may see on one day a solid inflamed swelling, firm and unyielding, giving no indication of containing a collection of fluid, but on the next day, one may detect, in the same swelling, the signs of suppuration: the border may feel as firm as before, but all the centre and the surface may be occupied by an ounce or more of pus. And yet, he observes "this change from the solid to the fluid state, takes place without any increase in the swelling. If the contents had been secreted into the centre of the tumor, there would certainly have

been an increase in its size. And further he says "These changes cannot be explained except on the admission, that the inflammatory product, which was effused and infiltrated into the tissues, has been liquified, its cells degenerating into pus corpuscles, and its blastema into the liquor puris.

In the pointing of an abscess, there seems to be a natural and invariable tendency toward a free surface - be it external or internal.

When an abscess is about to point externally, the surface becomes swollen, livid and tense; this lividity is in all probability, caused by the pressure of the confined pus upon the small vessels ramifying in the

integument, thereby obstructing the circulation in them.

In consequence of this condition, the tissues in which these vessels ramify, lose their vitality, and become softened; consequently, are less able to withstand the pressure of the tumor, which rapidly approaches the surface, when the now softened and relaxed integument gives way, and the contents of the abscess are discharged.

After all the pus is evacuated, the lymph cells lining the cavity, in consequence of being relieved from pressure, are disposed to become changed into granulation cells, and then the circulation in the vessels ramifying in the tissues surrounding the cavity,

becoming more active, gives a greater degree of vitality to the part; the character of the walls of the abscess is changed, it becoming a granulating surface, by which means it is healed. There are some surgeons who still hold the opinion, that the formation of pus, essentially depends on a destruction of the proper tissue of the part in which the process occurs. Now, while we ought to regard with deference and respect, the opinions of those who are older and more experienced in the medical profession, we should, at the same time exercise the right which, I have reason to believe, is freely granted us by our Alma Mater, viz: that of thinking for

ourselves, and forming our own conclusions.

The idea of the destruction of tissue being necessary to the formation of pus, has been discarded by some surgeons, as it could not be reconciled to the production of pus on mucous surfaces - as in Gonorrhoea or purulent ophthalmia.

In the former disease, the discharge of pus is so copious, as to necessitate the destruction of the whole of the tissue composing the penis, to afford material for its formation; yet, in every case the tissues are left intact, not an ulcer, or abraded surface, can be discovered. Whence then comes the pus? is the query.

In this disease, the inflammation is confined to the mucus membrane of the urethra, the vessels of which become engorged with blood; then there is the consequent exudation of lymph, which undergoes degeneration. That the vessels do not secrete the pus, is made evident from an experiment of Sir Everard Home; this gentleman, carefully viewed, through a microscope the inflammatory process, and saw distinctly the exudation of lymph, and its conversion into pus, while it remained on the surface. There are cases recorded where, in persons affected with Phthisis, the expectoration was of a puriform character, yet upon

post mortem examination, not the slightest trace of ulceration or destruction of tissue, could be discovered.

I have endeavored, thus far, to prove that pus is formed exclusively from the lymph, which exudes from the vessels of an inflamed part.

That the predisposition of lymph to undergo this change, is formed from the fact, that it is no longer in the vitalized condition it enjoyed while circulating with the life current; and also, when it is effused into the interstices of the cellular tissue, the central point cannot receive proper nourishment. Because the function of nutrition is in part destroyed in the part, and as a consequence,

degeneration takes place.

Suppuration does not result from a disintegration of the tissues; this is ulceration, or molecular death, and here we might draw the line of demarcation between the two.

The effects of suppuration, in some cases, are only local; but in others there are severe constitutional phenomena developed; as, for instance, where it is so extensive, that it drains the system of the vitality so necessary to its integrity.

Let us examine how this depression of the vital powers is accomplished.

When inflammation occurs in persons of a bad habit of body or scrofulous diathesis, it is but reasonable to suppose

that the vessels of the part affected, have not the power to return from the semi-paralytic condition, induced by the inflammation, to their normal condition.

As a result of this want of vitality in the vessels the lymph continues to exude, infiltrating the tissues, and impoverishing still further the constitution of the individual; and furthermore inducing a state of malnutrition; for there is no doubt that many of the constituents of the blood, which in the normal condition of the vessels, would have been distributed to the proper tissues for their nourishment, are contained in the exudation, and are thus thrown

out of the system. Now are we able to anticipate the results which must inevitably obtain from this condition of things. In all probability - Nectic; will supervene; the circulation becoming excitable, the pulse often rising to one hundred and twenty beats per minute, very weak and soft; the fever is characterized by distinct remissions and exacerbations - the latter occurring in the after part of the day.

The paroxysms are marked by a circumscribed redness of the cheeks, burning heat of the palms of the hands and the soles of the feet; the tongue becomes red along the edges and at the tip, the appetite fails, the eyes

present a glistening appearance, with dilated pupils; there are copious and exhausting night sweats, which soon produce their effect on the system; there is also a discharge of pale watery urine, with lateritious sediments; the bowels in the first stages of the fever are generally constipated, but they eventually relax, when a copious, and exhausting diarrhoea sets in, which increases the debility, and the patient soon dies from the effects of exhaustion.

When we contemplate the foregoing picture of suffering and death induced by suppuration, we are led to ask with an eminent pathologist, "Is there any end to be accomplished by the formation of pus in the system

we answer in the affirmative; for there are cases in which this process is necessary, for the elimination of the interstitial deposit, of inflammatory lymph. In surgical practice, the main indication, in indurated swellings is to promote suppuration.

There are, no doubt, many ideas with regard to the formation, and ultimate uses of pus, that remain to be developed. But our apparent want of knowledge should not discourage us, but with a persevering spirit, investigate, not only this, but every other subject pertaining to medical science; and as a reward for our labors, it may be our happy lot, to present to the medical world some new idea, or a solution of some pathological problem.

which as yet, remains hidden
from our view.

Philadelphia - Feb 2 1861

Dear Sir,

I have the honor to acknowledge the receipt of your letter of the 28th inst.

of the

Homoeopathic Medical College
of Pennsylvania.

The enclosed copy of the

by

J. C. H. H. H.

England

Philadelphia - Feb 2 1861